REMARKS

Claims 1-2 and 4-22 remain in this application. Claim 3 had been previously cancelled. Claims 1 and 12 are currently amended. Claims 4, 5 and 16 had been previously presented.

Applicant thanks the Examiner for the detailed study of the application and prior art.

Applicant stresses that the present claimed invention as now presented in this Amendment is more than a simple amplifier adjustment circuit operative with a transceiver module having a microwave monolithic integrated circuit (MMIC) and at least one amplifier such that the adjustment circuit senses an amplifier operating condition and adjusts the amplifier to compensate the RF gain stage. This appears to be the approach suggested by the Examiner, citing U.S. Patent No. 6,194,968 to Winslow, while applying a teaching of control data stored in a memory as suggested by U.S. Patent No. 5,828,953 to Kawase. According to the Examiner, this would prevent the amplifier from breaking down due to energy loss at a high level of transmission output.

Applicant stresses that the present claimed invention is more than the simple adjustment of an amplifier using operating values in stored data to prevent amplifier breakdown during operation. The present claimed invention as now set forth in this Amendment overcomes the disadvantages of manual tuning MMIC modules to optimize a module performance. It eliminates manual amplifier probing and module tuning before installation. The present claimed invention also allows radio frequency module performance to be optimized in real time without user intervention. It can be used in

communications, radar, fiber optics and other radio frequency and optical fiber applications.

As now claimed, the microwave monolithic integrated circuit (MMIC) has at least one amplifier. The controller comprises a microprocessor and memory as clearly shown in FIG. 1 of the present application and described throughout the detailed description. The memory includes stored values of preset MMIC characteristics at various stages in a radio frequency circuit. The controller is operative through the microprocessor and connected to the MMIC. The controller senses amplifier operating conditions, including amplifier current such as drain current, temperature and power output, and tunes the at least one amplifier to an optimum operating condition based not only on these stored values, but also on at least one of the sensed operating conditions. It is operative in a test and normal operational mode. The circuits in the cited prior art, i.e., Winslow and Kawase, are operable only in a normal operational mode. The present claimed invention can be used in both a test and normal operational mode.

Also, the present claimed invention has a microprocessor and memory operating together, which allows a controlled intelligence for tuning the at least one amplifier to an optimum operating condition based on the stored values and at least one of the sensed operating conditions, such as amplifier current, e.g., drain current, temperature and power output, in both a test and normal operational mode.

Winslow has no microprocessor and memory. Winslow is a simple control circuit formed from an operational amplifier having differential inputs as an inverting input

terminal and non-inverting input terminal for receiving differential voltages that correspond to sensed temperature and process variations. Winslow is a simple comparison circuit.

As to Kawase, it shows some use of a central processing unit 14 in conjunction with a memory 12. But the memory in Kawase, however, is used to store data for adjusting a drive voltage to a gate of an amplifier at a predetermined level based on command data received from a base station in a cellular network. This is important because the output level of a transmitted signal from a mobile radio must be changed in accordance with the distance from the base station with which the mobile radio is in communication. As operating conditions change, the transmission power changes.

At most, the combination of Winslow and Kawase suggests a control mechanism for a MMIC that uses memory and a CPU to change transmission power as a result of signal interference with the base station. The operating range of the transmitter and its amplifier would be changed based on signal values stored in memory. The drive voltage of a power supply would be changed.

The present claimed invention does more than receive command decisions for power adjustment. It includes a number of sensors as set forth in the detailed description and shown in FIG. 1 as part of the controller to sense amplifier operating conditions, including the amplifier current, for example, drain current, temperature and power output. The amplifier is tuned to an optimum operating condition based on the stored values and at least one of the sensed operating conditions not only in a test mode, but also in a normal

operating mode. Not only can the MMIC be tested and tuned during installation and assembly, but also its operating condition optimized during operation.

As set forth in some of the dependent claims, a digital potentiometer can be operative with the sensors to allow the RF MMIC module to self-adjust its gain as a function of temperature changes and allow module gain and output power to be controlled with high precision. This allows real-time individual chip control in addition to the control during testing.

Also, as set forth in independent claim 12, which recites a plurality of amplifiers as part of the MMIC, the gain and output power of each amplifier can be controlled individually or in groups. Nowhere does the cited prior art individually or in combination suggest this structure and function.

As to cited U.S. Patent No. 5,162,657 to Sturzebecher et al. (hereinafter "Sturzebecher"), it discloses the use of standard potentiometers in an optical controlled attenuator circuit using an operational amplifier for optical control of a microwave variable attenuator. The present claimed invention is specifically directed to a digital potentiometer and is operative with the sensors and microprocessor and associated memory for sensing changes in operating amplifier conditions and adjusting as claimed.

Nowhere do Winslow, Kawase or Sturzebecher either singularly or in combination disclose or suggest the present claimed invention.

In re Patent Application of:
AMMAR
Serial No. **09/863,052**
Filing Date: **May 22, 2001**
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Applicant contends that the present case is in condition for allowance and respectfully requests that the Examiner issue a Notice of Allowance and Issue Fee Due.

If the Examiner has any questions or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,

RICHARD K. WARTHER
Reg. No. 32,180
Allen, Dyer, Doppelt, Milbrath
& Gilchrist, P.A.
255 S. Orange Avenue, Suite 1401
Post Office Box 3791
Orlando, Florida 32802
Phone: 407-841-2330

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: **MAIL STOP AMENDMENT, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450**, on this 22nd day of February, 2005.

Julie Lalan